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Technology in preschool: from idea to product

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In the Swedish curriculum for pre-school:

Children should

- develop their ability to identify technology in everyday life, and explore how simple **technology** works
- be stimulated and challenged to develop their interest in science and **technology**



In the Swedish curriculum for pre-school:

The preschool teachers should

- challenge the curiosity of children and their growing understanding of language and communication, mathematics, as well as science and **technology**,



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The education of preschool teachers should include:

visualization of the students' tacit knowledge

visualization of their experience

technological literacy



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Course description

55 pre-service teacher students

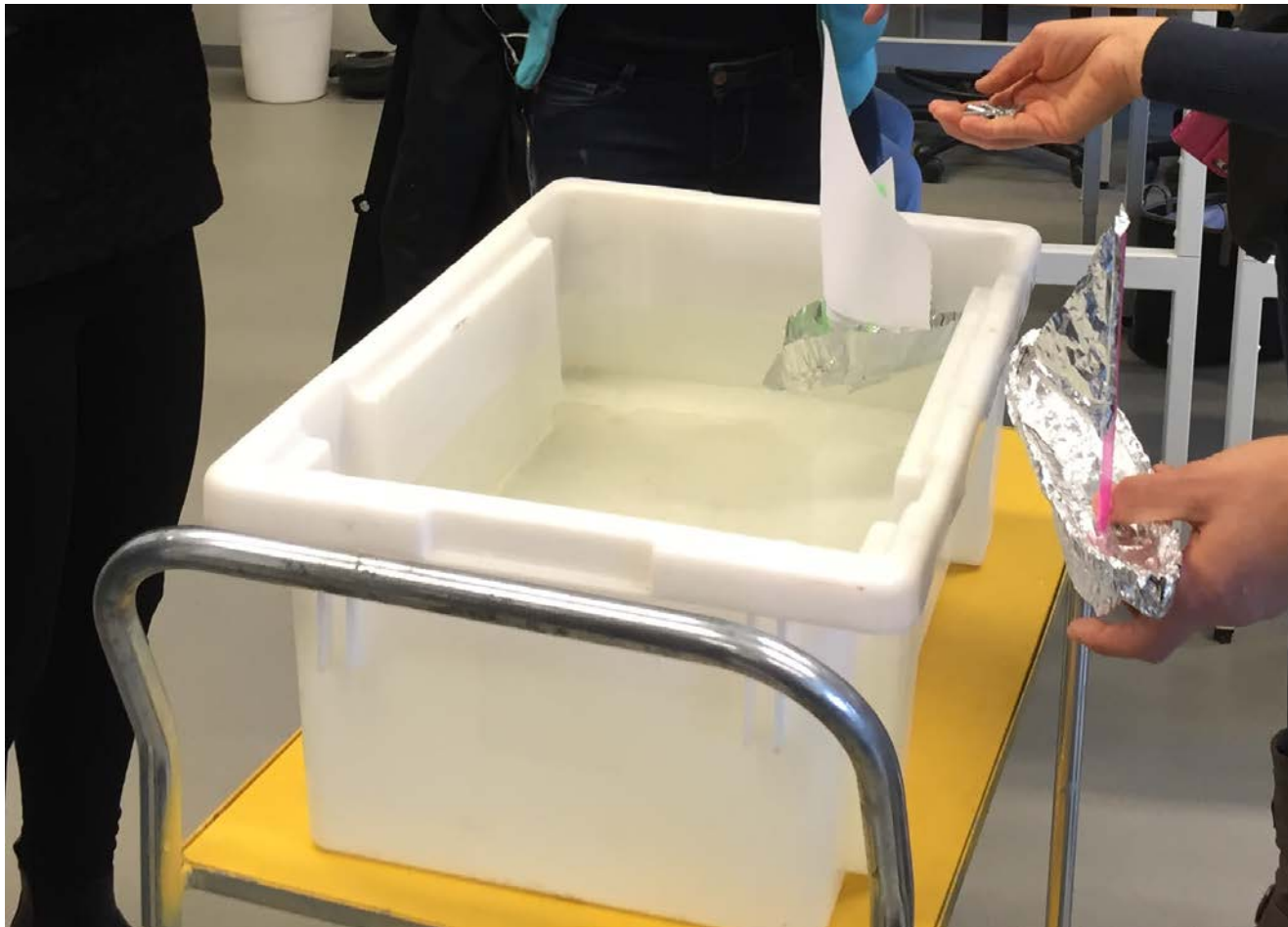
Technology the last three weeks of a 10 weeks course

Exercises in groups of 5-6 persons



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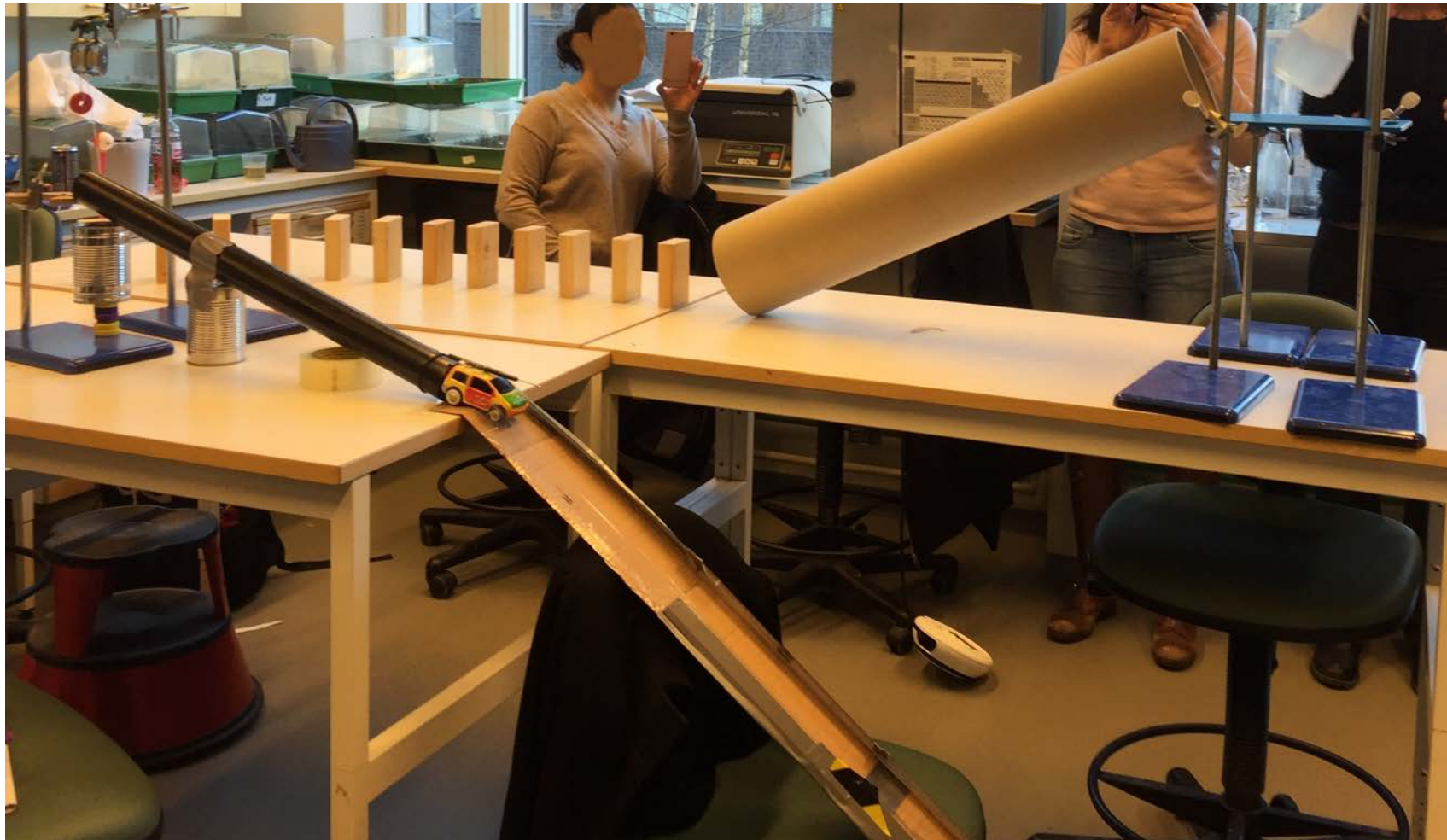
Construction of a sailing boat





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Construction of a Rube Goldberg machine





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Construction of a Jumping Jack Toy





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Outdoor technology walk

Identify five simple machines



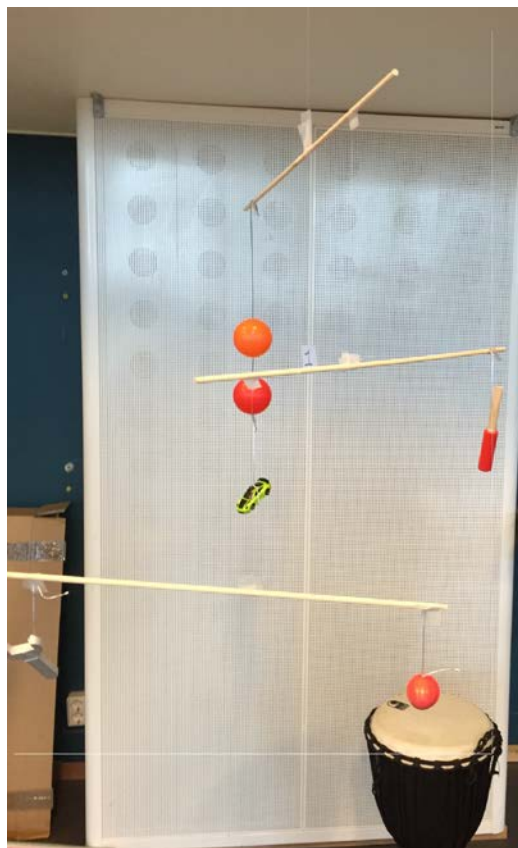
The wheel



The wheel



The inclined plane





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Visit to the museum of the ancient ship Vasa





Pedagogic design of technology teaching

Week of course	Subject or content	Type of activity	Report
8	Technology; sailing	Construction	Reflection
8	Outdoor technology walk	Observation	Group text
8	Technology; Rube Goldberg Machine	Construction	Reflection
9	Ancient ship Vasa museum	Observation	Reflection
9	Mobile	Experiment	AELP
9	Technology; Jumping Jack	Construction	Reflection
10	Written examination; technology	Assessment	Text
10	Exhibition	Presentation	AELP
11	Overall technology report	Text	Reflection



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Question 1



Identify three (3) examples of technology in everyday life in the picture (draw circles). Use the rubric below as support for answering the question.

	Good	Better
Identification	Correct	Explanation of the function
Artefact	Described	Special characteristics of construction
Context	When is it used?	Part in a larger system
Benefits of the tool	Explains	Compares without the tool
Reflection	Own experiences..	..in a wide context.



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Question 2

Design pedagogic technological activities in preschool with the theme “technology at home”.



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Analysis of:

Written examination

Comparison of assessed marks with 4R's of Doll's
Quality markers

Overall technology report

4R's of Doll's was used as quality markers



Pedagogic design of technology teaching

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4R's of Doll

Doll's 4R's, *recursion, relations richness* and *rigor*, can be used to investigate the quality in reflections and other texts.



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4R's of Doll's

Relations	1. Describes relations between persons or objects and context.
	2. Emphasizes the importance of interactions.
	3. Describes the process.
Recursion	1. Refers to previous experience
	2. Refers to learning out of previous experience.
	3. Consistently use of recursion.
Richness	1. Rich vocabulary and varied language use.
	2. Writing in own words, indicating acquired knowledge.
	3. Use of several approaches (perspectives, dimensions).
Rigor	1. Unexpected change of subject within the context
	2. Unexpected change of subject outside the context
	3. Courage to leave the framework totally and enter new contexts.



Results

Technology report

Many students showed high quality showing several aspects of understanding.



	Level	Relations	Recursion	Richness	Rigor
Overall technology report	0	0	4	5	27
	1	22	24	11	17
	2	32	27	28	9
	3	1	0	11	2
	Average	2,15	1,98	1,36	0,26
Examination question 1	0	7	3	11	39
	1	4	7	18	5
	2	11	25	8	2
	3	25	12	10	1
	Average	1,62	1,42	1,82	0,75
Examination question 2	0	9	13	17	30
	1	18	22	14	16
	2	13	15	16	8
	3	15	5	8	1
	Average	1,62	1,22	1,27	0,64



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Associations between 4R's of Doll's and the marks were analysed with clustering and ordination techniques using the R statistical program.



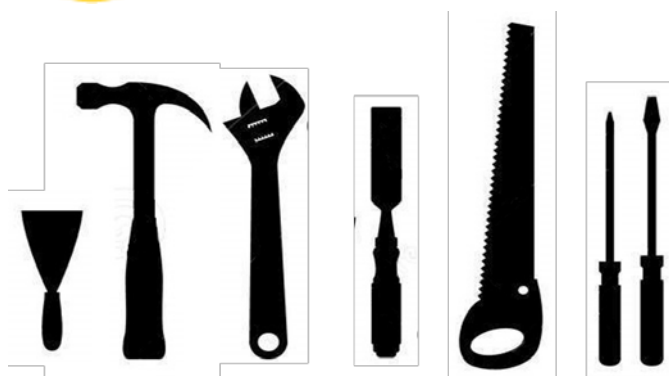
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The technology report contained reflections of the construction exercises, the interactions in the group and what they learned.



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Question 1

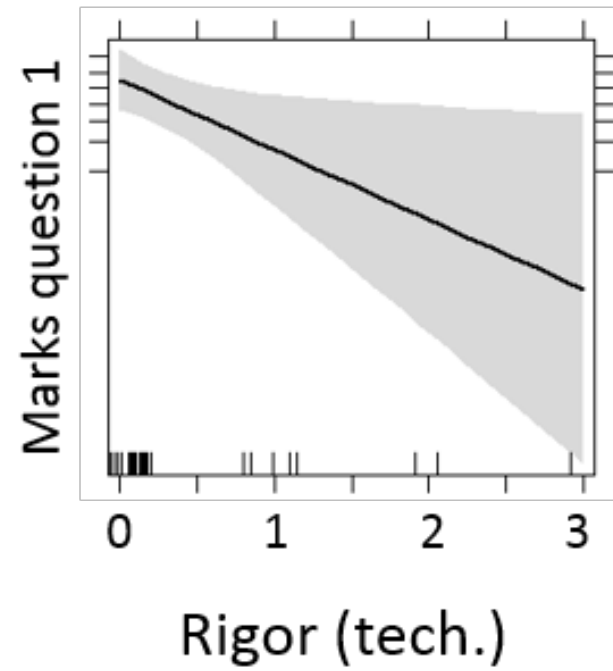
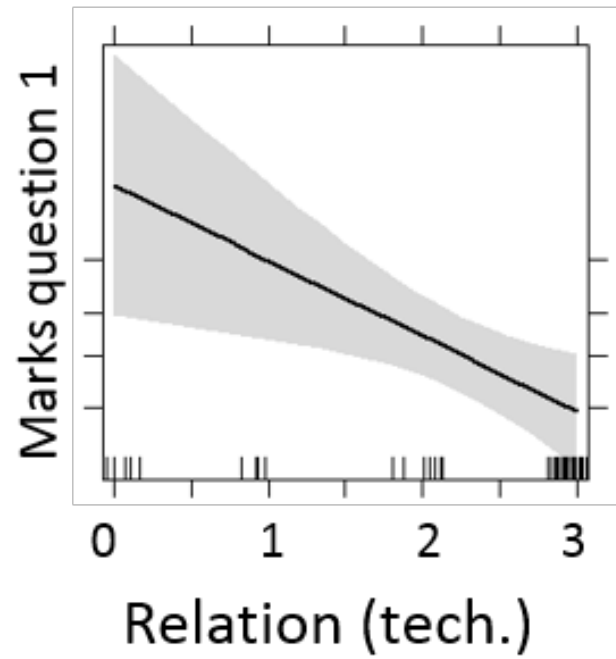


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A





Results

Students describing relations and technology outside the context (rigor) in their technology report had less probability to get high marks on question 1 in the exam.



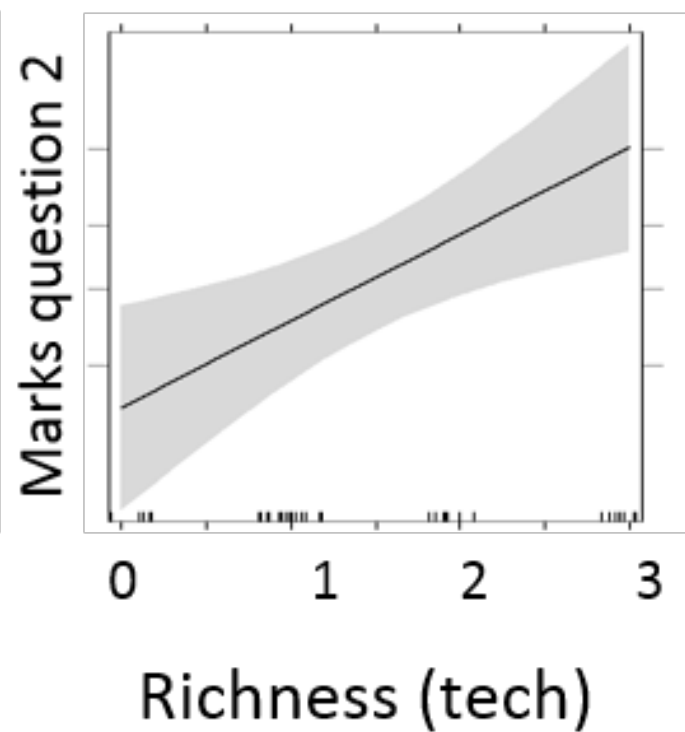
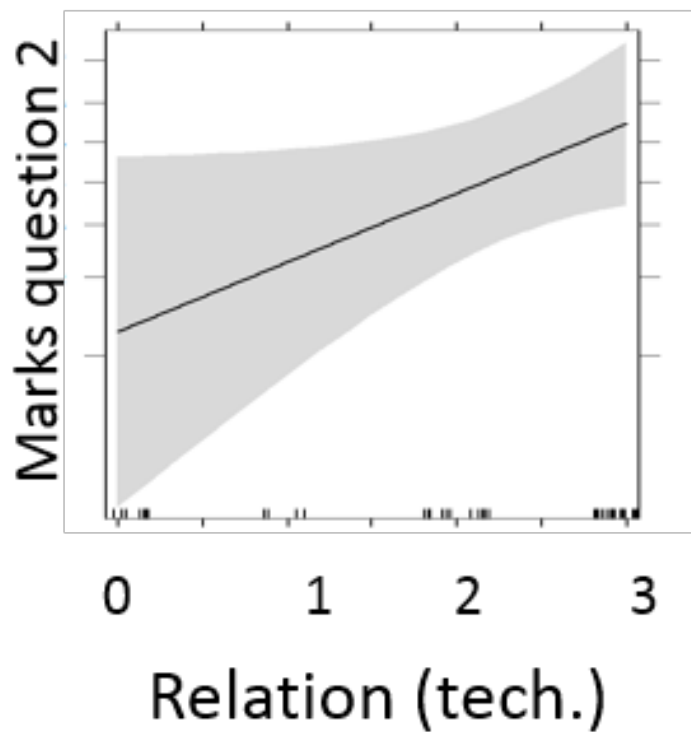
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Question 2

Design pedagogic technological activities in preschool with the theme “technology at home”.



B





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Results

Students describing relations and richness in their technology report are more likely to have high marks on question 2.



Summary

Reflection texts had high quality and indicated fairly high technology literacy.

The analysis of the technology texts and the exam questions using 4R's of Doll's showed that students use the R's differently when answering open tasks compared to more closed questions.